UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

CHAIRMAN

May 4, 2004

Mr. Michael H. Dworkin, Chairman
Vermont Public Service Board
112 State Street, Drawer 20
Montpelier, Vermont 05620-2701

Dear Mr. Dworkin:

I am responding on behalf of the U.S. Nuclear Regulatory Commission (NRC) to your letters dated March 15 and 31, 2004, regarding the request by Entergy Nuclear Vermont Yankee, LLC, and Entergy Nuclear Operations, Inc. (Entergy), to amend the Vermont Yankee Nuclear Power Station license to increase the power level of the facility. In those letters, the Vermont Public Service Board requested that the NRC conduct its review of the proposed power uprate in a way that would provide Vermont a level of assurance about plant reliability equivalent to an independent engineering assessment. The NRC has decided to conduct a detailed engineering inspection that we believe will be appropriate for addressing our oversight responsibilities and is also responsive to the Board's concerns. This inspection will be performed as part of a new engineering inspection program that the NRC has been developing to enhance the Reactor Oversight Process.

NRC regulations and its oversight process focus on ensuring nuclear safety, whether the facility is operating at power or shut down. The NRC's statutory authority does not extend to regulating the reliability of electrical generation. The NRC recognizes, however, that there is some overlap between attributes that result in safe operation and those that contribute to overall plant reliability.

The Commission understands that the Board is concerned about the reliability of Vermont Yankee following an increase in power level, especially in light of operational issues that have occurred at some other plants that have recently implemented extended power uprates. The NRC recognizes the importance of these issues and is taking steps to ensure that they are satisfactorily addressed to maintain safety. For example, in response to instances of steam dryer cracking at some boiling water reactors, outside technical experts are assisting NRC staff in performing an audit of General Electric's analyses related to steam dryer performance and specific issues related to Vermont Yankee. We continue to engage the industry to ensure resolution of these issues and will consider additional regulatory action, if needed.

EXHIBIT 1

The NRC's established review process for power uprate applications is independent, thorough, and comprehensive. A description of the review process is enclosed. Engineering assessments have always been an integral part of the NRC's safety activities. Under our current Reactor Oversight Process, NRC resident inspectors and regional specialists routinely evaluate the work performed by the licensee's engineering organization to determine whether engineering analyses adequately support safe operation. Over the past several months, the NRC has been developing a new engineering inspection program which we intend to pilot at selected plants. The NRC staff considered a number of factors, including the Board's request for an independent engineering assessment, and concluded it is appropriate to conduct this engineering inspection at Vermont Yankee. This new engineering assessment inspection incorporates the best practices of the existing and past engineering inspections. The NRC will use this inspection to verify that design bases have been correctly implemented for a sampling of components across multiple systems and to identify latent design issues. The inspection process uses operating experience, risk assessment, and engineering analysis to select risk-significant components and operator actions, and will ensure that adequate safety margins exist. Although the specific sampling of components is still being developed, it will include components from multiple systems that are potentially affected by a power uprate such as the emergency core cooling systems, the containment system, power conversion systems, and auxiliary systems. The inspection will be performed by a team of approximately six inspectors, including some NRC inspectors who do not have recent oversight experience with Vermont Yankee and at least two contractors with design experience. Three weeks of on-site inspection and over 700 hours of direct inspection time will be conducted. This level of effort exceeds that of the biennial safety system design inspection. The Commission believes it is appropriate for addressing the NRC's oversight responsibilities and is also responsive to the Board's concerns. The NRC staff will inform the State of Vermont of the schedule for this inspection to facilitate participation by State representatives, consistent with NRC policy.

The NRC Advisory Committee on Reactor Safeguards (ACRS) will also review the Vermont Yankee power uprate request. The ACRS is a statutory committee that reports directly to the Commission and is structured to provide a forum where experts representing many technical perspectives can provide advice that is factored into the NRC's decision-making process. The NRC staff will provide the results of its review efforts, including relevant inspection findings, to the ACRS for review. After the ACRS completes its review, it will make an independent recommendation regarding whether the proposed power uprate amendment should be approved.

The NRC will not approve the Vermont Yankee uprate, or any proposed change to a plant license, unless the NRC staff can conclude that the proposed change will be executed in a manner that assures the public's health and safety. In response to your request, the NRC staff has taken a close look at proposed inspections and technical reviews to ensure that they will identify and address potential safety concerns for operating at uprated power conditions. The staff has concluded that the detailed technical review, prescribed in the Extended Power Uprate Review Standard, coupled with the normal associated program of power uprate and engineering inspections, will provide the information necessary for the NRC staff to make a

decision on the safety of operation of Vermont Yankee under uprated power conditions. The Commission believes that the results of NRC reviews and inspections, particularly the new engineering inspection, will assist in addressing the Board's concerns regarding the future reliability of Vermont Yankee. The NRC staff is prepared to meet with the Board to explain further our review process and scope, including the engineering assessment inspection.

Sincerely,

/RA/

Nils J. Diaz

Enclosure:
Established NRC Power Uprate Review Process

Established NRC Power Uprate Review Process

The NRC's established review process for power uprate applications is independent, thorough, and comprehensive. A team of engineers with specialties in a minimum of 17 different technical areas will review the Vermont Yankee power uprate application. The NRC plans to expend about 4000 hours to perform a comprehensive assessment of the engineering, design, and safety analyses related to the uprate. The NRC's "Review Standard for Extended Power Uprates" guides the staff in its review of the application. The Review Standard also provides guidance for determining when and what type of audits should be performed at the plant or vendor sites, as well as for performing our own confirmatory analyses and independent calculations to supplement the review.

The NRC's review of the power uprate application also includes on-site inspections. NRC inspections will review selected activities and modifications made to allow operation at higher power levels to verify that changes to plant systems will support safe plant operation and are in accordance with Vermont Yankee's licensing and design bases. The NRC will use Inspection Procedure 71004, "Power Uprates," as well as a number of our baseline inspection procedures to inspect issues specifically related to power uprate. These inspections will assess changes that could impact the integrity of barriers (e.g., higher flow rates which could increase vibration at specific support points), safety evaluations, plant modifications, post maintenance and surveillance testing, heat exchanger performance, and integrated plant operation. Additionally, our other baseline inspection activities, while not specifically directed at power uprate activities, will provide additional information about Vermont Yankee's ability to operate safely at a higher power level.

The NRC will adjust, as necessary, our technical review, audit plans, confirmatory analyses, or inspection activities if any issues are identified which may have a bearing on our decision on the Vermont Yankee power uprate application. For example, a recent examination of the steam dryer at Vermont Yankee identified cracks on both interior and exterior structures of the steam dryer. The steam dryer is an important component in the process for converting steam to electrical energy, but is not used to mitigate any accidents. The NRC is interested in steam dryer cracking because of the potential for parts to break loose and impact the performance of safety-related equipment. Entergy has indicated that the cracks are in low-stress, low-steam flow areas of the dryer and not in the areas where cracks were observed at other plants that implemented extended power uprates. NRC inspectors monitored Entergy's steam dryer inspection activities, and we will thoroughly review Entergy's follow-up actions as part of our evaluation of Vermont Yankee's request to operate at a higher power level.

Assessment of engineering has always been an integral part of the NRC's safety mission. In the 1990s, the NRC performed extensive reviews at plants across the country to determine if licensees were operating plants in accordance with their design bases. As part of this review, two team inspections were conducted at Vermont Yankee in 1997. One of these inspections was led by staff from NRC headquarters and included six contractors. In 1998, the NRC conducted an engineering inspection, as well as a team inspection to address operability issues resulting from Vermont Yankee's configuration improvement program. Under our current Reactor Oversight Process, NRC resident inspectors and regional specialists routinely evaluate the work performed by the licensee's engineering organization to determine whether the engineering analyses adequately supports safe operation. Our inspectors conduct both routine engineering inspections, as well as an in-depth team inspection every two years. Since the Reactor Oversight Process was implemented in 2000, the NRC has conducted two such safety system design team inspections.

Enclosure